* NOTICES *

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U: H05-38606

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CLAIMS

[Utility model registration claim]
[Claim 1] While carrying out opening of the circular crevice which contains a spherical ball lens to a lens holder to a top face and forming it in it Carry out opening of the insertion hole of the ferrule which equipped said lens holder with fiber core wire on the axial center to an inferior surface of tongue, and it forms [it is open for free passage and] in said crevice. In the ball lens collimator which makes said ball lens contained to said crevice come to carry out contiguity opposite of the upper limit side of said ferrule inserted in said insertion hole The ball lens collimator contained to said crevice as formed the circular free passage hole of said insertion hole and this alignment in the base of said crevice from said ball lens in the minor diameter and dropped said ball lens into said free passage hole.
[Claim 2] While carrying out opening of the circular crevice which contains a spherical ball lens to a lens holder to a top face and forming it in it Carry out opening of the insertion hole of the ferrule which equipped said lens holder with fiber core wire on the axial center to an inferior surface of tongue, and it forms [it is open for free passage and] in said crevice. In the ball lens collimator which makes said ball lens contained to said crevice come to carry out contiguity opposite of the upper limit side of said ferrule inserted in said insertion hole A lower limit is the ball lens collimator with which upper limit formed [lens / said / ball] the earthenware mortar-like taper side of a major diameter in said insertion hole and this alignment from said ball lens in the minor diameter to the inner skin of said crevice.

[Translation done.]

DETAILED DESCRIPTION

[Detailed explanation of a design]
[0001]
[Industrial Application]
This design is involved in amelioration of the centering structure of a ball lens in detail about the ball lens collimator which used the spherical ball lens.
[0002]
[Description of the Prior Art]
Conventionally, in the collimator built into various optical instruments, it has structure as there are some which used the ball lens, for example, shown in drawing 3 .
Namely, while carrying out opening of the circular crevice 3 which contains the spherical ball lens 2 to a top face and forming it in the upper part of a lens holder 1 on it Carry out opening of the insertion hole 6 of the ferrule 5 which equipped the lower part of a lens holder 1 with the fiber core wire 4 on the axial center to an inferior surface of tongue, and it forms [it is open for free passage and] in a crevice 3. By carrying out contiguity opposite of the ball lens 2 contained to the upper limit side and crevice 3 of the ferrule 5 inserted in the insertion hole 6, light from the fiber core wire 4 is made into parallel light with the ball lens 2, or parallel light is converged with the ball lens 2, and incidence is carried out to the fiber core wire 4.
[0003]
On the occasion of the assembly of the ball lens collimator mentioned above, a ferrule 5 is first inserted in the insertion hole 6 of a lens holder 1, this is inserted in a tacking meal and the next, the ball lens 2 is inserted in a crevice 3, and he fixes this with adhesives 7, and is trying to fix a ferrule 5 with adhesives 8 after that.
[0004]
In this case, the centering of the ball lens 2 and a ferrule 5 is received. After forming a crevice 3 and the insertion hole 6 in this alignment, it is obtained by processing the bore of a crevice 3 into the same path as the ball lens 2. In case the ball lens 2 is fixed with adhesives 7, also in order not to make the bottom half section of the ball lens 2 flow down these adhesives 7, it is necessary to make the bore of a crevice 3 into the same path as the ball lens 2.
[0005]
[Problem(s) to be Solved by the Device]
Although it is the configuration of performing the centering of this crevice 3 and the ferrule 5 inserted in the insertion hole 6 of this alignment by inserting the ball lens 2 in the crevice 3 of the same path as this if it is in the conventional ball lens collimator Since the ball lens 2 is processed in the precision of several micron order, micron order is [the dimensional tolerance of the bore of the crevice 3 which inserts this ball lens 2] needed. In order to produce the problem which needs highly precise processing for a lens holder 1 and to perform such highly precise processing moreover, a lens holder 1 is limited to the quality of the material with a special ceramic etc., and there is a difficulty of becoming expensive.
[0006]
The place which this design is made with careful attention to such a trouble that a Prior art has, and is made into the purpose is to offer the ball lens collimator which ****** highly precise

processing to a lens holder, and can perform a centering easily.
[0007]
[Means for Solving the Problem]
As the circular free passage hole of the insertion hole of a ferrule and this alignment formed [in the minor diameter] in the base of the circular crevice formed in the lens holder by carrying out opening in the ball lens collimator of this design on the top face in order to attain said purpose by carrying out opening from the spherical ball lens on the inferior surface of tongue at the lens holder is formed and a ball lens is dropped into this free passage hole, it contains to a crevice.
[0008]
Moreover, it forms in the inner skin of the circular crevice formed by carrying out opening to a lens holder in the ball lens collimator of this design on the top face from a ball lens with a spherical lower limit at the insertion hole [of the ferrule formed by upper limit carrying out / in a minor diameter / opening of the earthenware mortar / of a major diameter /-like taper side to a lens holder from this ball lens on the inferior surface of tongue], and said alignment.
[0009]
[Function]
Since a ball lens is contained in the case of the former as it drops into the circular free passage hole formed in the crevice base of a lens holder if it is in the ball lens collimator of a configuration of having mentioned above, the core of a ball lens will be located on the axial center of a free passage hole, and since this free passage hole is the insertion hole and this alignment of a ferrule, the centering of a ball lens and the ferrule inserted in the insertion hole is realized easily.
[0010]
Moreover, since the core of a ball lens is located on the axial center of a taper side since the ball lens inserted in the crevice of a lens holder touches the taper side of crevice inner circumference in the case of the latter, and this taper side is formed in the insertion hole and this alignment of a ferrule, the centering of a ball lens and the ferrule inserted in the insertion hole is realized easily.
[0011]
[Example]
It explains about an example using drawing 1 and drawing 2 . In addition, the same sign as the above is taken as the same or the thing which shows a corresponding thing.
(Example 1)
First, the example 1 corresponding to claim 1 is explained using drawing 1 .
The circular crevice 3 formed in the upper part of a lens holder 1 by carrying out opening on the top face is formed in a major diameter from the spherical ball lens 2, and the circular free passage hole 9 which opens a crevice 3 and the insertion hole 6 of a ferrule 5 for free passage in a minor diameter is formed in the base of this crevice 3 from the ball lens 2 at the insertion hole 6 and this alignment.
[0012]
If it is in such a configuration, the centering of the ferrule 5 and the ball lens 2 which could double the core of the ball lens 2 on the axial center of the free passage hole 9, therefore were inserted in the insertion hole 6 of the free passage hole 9 and this alignment is realized by inserting the ball lens 2 in a crevice 3, and dropping the ball lens 2 into the free passage hole 9. Moreover, after fixing on the occasion of an assembly with the adhesives 7 which slushed into the base of a crevice 3 the ball lens 2 of the ball lens 2 and a ferrule 5 which could either insert, dropped into the free passage hole 9, and was contained to the crevice 3, a ferrule 5 is fixed with adhesives 8.
[0013]
(Example 2)
Below, the example 2 corresponding to claim 2 is explained using drawing 2 .
The earthenware mortar-like taper side 10 of a ball lens 2 twist minor diameter is formed [upper limit] in the lower inner circumference whose circular crevice 3 formed in the upper part of a lens holder 1 by carrying out opening on the top face the up inner circumference is formed in a

major diameter from the spherical ball lens 2, and is a crevice 3 for the lower limit from the ball lens 2 by the major diameter, i.e., the same path as the up inner circumference of a crevice 3.
[0014]
This crevice 3 is formed in the insertion hole 6 and this alignment of a ferrule 5, and the base of a crevice 3 is opening it for free passage in the insertion hole 6 through the free passage hole 11. In addition, this free passage hole 11 is formed if needed by relation with the focal distance of the ball lens 2, and when unnecessary, opening of the lower limit of the taper side 10 is carried out to the direct insertion hole 6.
[0015]
If it is in such a configuration, the centering of the ferrule 5 and the ball lens 2 which the core of the ball lens 2 which touched the taper side 10 was located on the axial center of the taper side 10, therefore inserted in the insertion hole 6 of the taper side 10 and this alignment is realized by inserting the ball lens 2 in a crevice 3.
In addition, the ball lens 2 contained by the crevice 3 is fixed by the adhesives 7 between the taper sides 10.
[0016]
[Effect of the Device]
Since this design is constituted as explained above, it does so the effectiveness indicated below.

If it is in a ball lens collimator according to claim 1, by forming a free passage hole in the crevice base of a lens holder 1 at the insertion hole for ferrules, and this alignment, a centering can be performed only by dropping a ball lens into this free passage hole, the dimensional tolerance of a lens holder becomes good by several conventional micron order to dozens of micron order, highly precise processing is not needed, and a centering is realized easily.
[0017]
Moreover, if it is in a ball lens collimator according to claim 2, by forming a earthenware mortar-like taper side in the crevice inner skin of a lens holder 1 at the insertion hole for ferrules, and this alignment, a centering can be performed only by inserting a ball lens in a crevice, highly precise processing is not needed like the above-mentioned, and a centering is realized easily.

[Translation done.]

TECHNICAL FIELD

[Industrial Application]
This design is involved in amelioration of the centering structure of a ball lens in detail about the ball lens collimator which used the spherical ball lens.
[0002]

[Translation done.]

PRIOR ART

[Description of the Prior Art]
Conventionally, in the collimator built into various optical instruments, it has structure as there are some which used the ball lens, for example, shown in drawing 3 .
Namely, while carrying out opening of the circular crevice 3 which contains the spherical ball lens 2 to a top face and forming it in the upper part of a lens holder 1 on it Carry out opening of the insertion hole 6 of the ferrule 5 which equipped the lower part of a lens holder 1 with the fiber core wire 4 on the axial center to an inferior surface of tongue, and it forms [it is open for free passage and] in a crevice 3. By carrying out contiguity opposite of the ball lens 2 contained to the upper limit side and crevice 3 of the ferrule 5 inserted in the insertion hole 6, light from the fiber core wire 4 is made into parallel light with the ball lens 2, or parallel light is converged with the ball lens 2, and incidence is carried out to the fiber core wire 4.
[0003]
On the occasion of the assembly of the ball lens collimator mentioned above, a ferrule 5 is first inserted in the insertion hole 6 of a lens holder 1, this is inserted in a tacking meal and the next, the ball lens 2 is inserted in a crevice 3, and he fixes this with adhesives 7, and is trying to fix a ferrule 5 with adhesives 8 after that.
[0004]
In this case, the centering of the ball lens 2 and a ferrule 5 is received. After forming a crevice 3 and the insertion hole 6 in this alignment, it is obtained by processing the bore of a crevice 3 into the same path as the ball lens 2. In case the ball lens 2 is fixed with adhesives 7, also in order not to make the bottom half section of the ball lens 2 flow down these adhesives 7, it is necessary to make the bore of a crevice 3 into the same path as the ball lens 2.
[0005]

[Translation done.]

EFFECT OF THE INVENTION

[Effect of the Device]
Since this design is constituted as explained above, it does so the effectiveness indicated below.

If it is in a ball lens collimator according to claim 1, by forming a free passage hole in the crevice base of a lens holder 1 at the insertion hole for ferrules, and this alignment, a centering can be performed only by dropping a ball lens into this free passage hole, the dimensional tolerance of a lens holder becomes good by several conventional micron order to dozens of micron order, highly precise processing is not needed, and a centering is realized easily.
[0017]
Moreover, if it is in a ball lens collimator according to claim 2, by forming a earthenware mortar-like taper side in the crevice inner skin of a lens holder 1 at the insertion hole for ferrules, and this alignment, a centering can be performed only by inserting a ball lens in a crevice, highly precise processing is not needed like the above-mentioned, and a centering is realized easily.

[Translation done.]

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Device]
Although it is the configuration of performing the centering of this crevice 3 and the ferrule 5 inserted in the insertion hole 6 of this alignment by inserting the ball lens 2 in the crevice 3 of the same path as this if it is in the conventional ball lens collimator Since the ball lens 2 is processed in the precision of several micron order, micron order is [the dimensional tolerance of the bore of the crevice 3 which inserts this ball lens 2] needed. In order to produce the problem which needs highly precise processing for a lens holder 1 and to perform such highly precise processing moreover, a lens holder 1 is limited to the quality of the material with a special ceramic etc., and there is a difficulty of becoming expensive.
[0006]
The place which this design is made with careful attention to such a trouble that a Prior art has, and is made into the purpose is to offer the ball lens collimator which ****** highly precise processing to a lens holder, and can perform a centering easily.
[0007]

[Translation done.]

MEANS

[Means for Solving the Problem]
As the circular free passage hole of the insertion hole of a ferrule and this alignment formed [in the minor diameter] in the base of the circular crevice formed in the lens holder by carrying out opening in the ball lens collimator of this design on the top face in order to attain said purpose by carrying out opening from the spherical ball lens on the inferior surface of tongue at the lens holder is formed and a ball lens is dropped into this free passage hole, it contains to a crevice.
[0008]
Moreover, it forms in the inner skin of the circular crevice formed by carrying out opening to a lens holder in the ball lens collimator of this design on the top face from a ball lens with a spherical lower limit at the insertion hole [of the ferrule formed by upper limit carrying out / in a minor diameter / opening of the earthenware mortar / of a major diameter /-like taper side to a lens holder from this ball lens on the inferior surface of tongue], and said alignment.
[0009]

[Translation done.]

OPERATION

[Function]
Since a ball lens is contained in the case of the former as it drops into the circular free passage hole formed in the crevice base of a lens holder if it is in the ball lens collimator of a configuration of having mentioned above, the core of a ball lens will be located on the axial center of a free passage hole, and since this free passage hole is the insertion hole and this alignment of a ferrule, the centering of a ball lens and the ferrule inserted in the insertion hole is realized easily.
[0010]
Moreover, since the core of a ball lens is located on the axial center of a taper side since the ball lens inserted in the crevice of a lens holder touches the taper side of crevice inner circumference in the case of the latter, and this taper side is formed in the insertion hole and this alignment of a ferrule, the centering of a ball lens and the ferrule inserted in the insertion hole is realized easily.
[0011]

EXAMPLE

[Example]
It explains about an example using drawing 1 and drawing 2 . In addition, the same sign as the above is taken as the same or the thing which shows a corresponding thing.
(Example 1)
First, the example 1 corresponding to claim 1 is explained using drawing 1 .
The circular crevice 3 formed in the upper part of a lens holder 1 by carrying out opening on the top face is formed in a major diameter from the spherical ball lens 2, and the circular free passage hole 9 which opens a crevice 3 and the insertion hole 6 of a ferrule 5 for free passage in a minor diameter is formed in the base of this crevice 3 from the ball lens 2 at the insertion hole 6 and this alignment.
[0012]
If it is in such a configuration, the centering of the ferrule 5 and the ball lens 2 which could double the core of the ball lens 2 on the axial center of the free passage hole 9, therefore were inserted in the insertion hole 6 of the free passage hole 9 and this alignment is realized by inserting the ball lens 2 in a crevice 3, and dropping the ball lens 2 into the free passage hole 9. Moreover, after fixing on the occasion of an assembly with the adhesives 7 which slushed into the base of a crevice 3 the ball lens 2 of the ball lens 2 and a ferrule 5 which could either insert, dropped into the free passage hole 9, and was contained to the crevice 3, a ferrule 5 is fixed with adhesives 8.
[0013]
(Example 2)
Below, the example 2 corresponding to claim 2 is explained using drawing 2 .
The earthenware mortar-like taper side 10 of a ball lens 2 twist minor diameter is formed [upper limit] in the lower inner circumference whose circular crevice 3 formed in the upper part of a lens holder 1 by carrying out opening on the top face the up inner circumference is formed in a major diameter from the spherical ball lens 2, and is a crevice 3 for the lower limit from the ball lens 2 by the major diameter, i.e., the same path as the up inner circumference of a crevice 3.
[0014]
This crevice 3 is formed in the insertion hole 6 and this alignment of a ferrule 5, and the base of a crevice 3 is opening it for free passage in the insertion hole 6 through the free passage hole 11. In addition, this free passage hole 11 is formed if needed by relation with the focal distance of the ball lens 2, and when unnecessary, opening of the lower limit of the taper side 10 is carried out to the direct insertion hole 6.
[0015]
If it is in such a configuration, the centering of the ferrule 5 and the ball lens 2 which the core of the ball lens 2 which touched the taper side 10 was located on the axial center of the taper side 10, therefore inserted in the insertion hole 6 of the taper side 10 and this alignment is realized by inserting the ball lens 2 in a crevice 3.
In addition, the ball lens 2 contained by the crevice 3 is fixed by the adhesives 7 between the taper sides 10.
[0016]

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the sectional view showing the example 1 of the ball lens collimator by this design.
[Drawing 2] It is the sectional view showing the example 2 of this design.
[Drawing 3] It is the sectional view showing the conventional example.
[Description of Notations]
1 Lens Holder
2 Ball Lens
3 Crevice
4 Fiber Core Wire
5 Ferrule
6 Insertion Hole
9 Free Passage Hole
10 Taper Side

[Translation done.]

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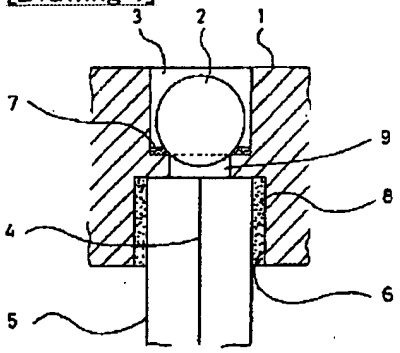
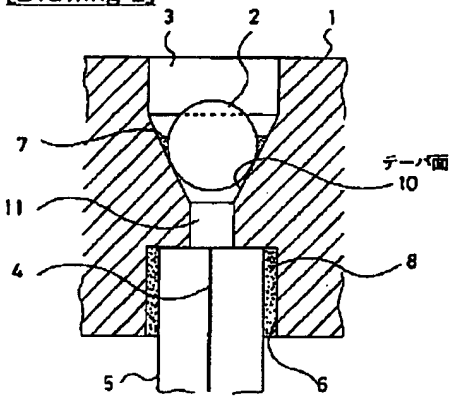
DRAWINGS

[Drawing 1]

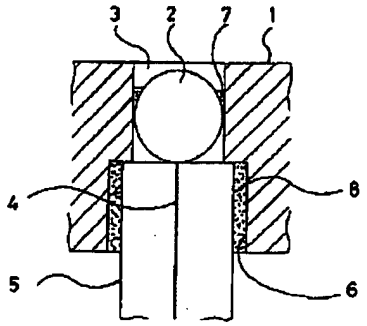


1 レンズホルダ
2 ボールレンズ
3 凹部
4 ファイバ心線
5 フェルール
6 挿入穴
9 連通孔

[Drawing 2]



[Drawing 3]



[Translation done.]

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審査請求　未請求　請求項の数２(全　２　頁)

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(71)出願人　000003942
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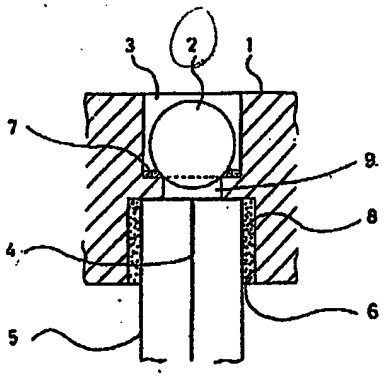
(74)代理人　弁理士　藤田　龍太郎

(54)【考案の名称】　ボールレンズコリメータ

(57)【要約】

【目的】　レンズホルダに高精度の加工を施すことなく容易に心出しが行えるボールレンズコリメータを提供する。

【構成】　レンズホルダ１に球状のボールレンズ２を収納する円形凹部３を上面に開口して形成すると共に、レンズホルダ１に軸心上にファイバ心線４を備えたフェルール５の挿入穴６を下面に開口しかつ凹部３に連通して形成し、凹部３の底面にボールレンズ２より小径で挿入穴６と同心の円形の連通孔９を形成し、ボールレンズ２を連通孔９に落し込むようにして凹部３に収納する。



1　レンズホルダ
2　ボールレンズ
3　凹部
4　ファイバ心線
5　フェルール
6　挿入穴
9　連通孔

1

【実用新案登録請求の範囲】

【請求項1】　レンズホルダに球状のボールレンズを収納する円形凹部を上面に開口して形成すると共に、前記レンズホルダに軸心上にファイバ心線を備えたフェルールの挿入穴を下面に開口しかつ前記凹部に連通して形成し、前記挿入穴に挿入した前記フェルールの上端面を前記凹部に収納した前記ボールレンズに近接対向させてなるボールレンズコリメータにおいて、

前記凹部の底面に前記ボールレンズより小径で前記挿入穴と同心の円形の連通孔を形成し、前記ボールレンズを前記連通孔に落し込むようにして前記凹部に収納したボールレンズコリメータ。

【請求項2】　レンズホルダに球状のボールレンズを収納する円形凹部を上面に開口して形成すると共に、前記レンズホルダに軸心上にファイバ心線を備えたフェルールの挿入穴を下面に開口しかつ前記凹部に連通して形成し、前記挿入穴に挿入した前記フェルールの上端面を前記凹部に収納した前記ボールレンズに近接対向させてな＊

2

＊るボールレンズコリメータにおいて、

前記凹部の内周面に下端が前記ボールレンズより小径で上端が前記ボールレンズより大径のすり鉢状テーパ面を前記挿入穴と同心に形成したボールレンズコリメータ。

【図面の簡単な説明】

【図1】本考案によるボールレンズコリメータの実施例1を示す断面図である。

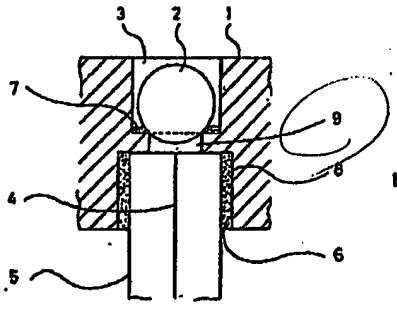
【図2】本考案の実施例2を示す断面図である。

【図3】従来例を示す断面図である。

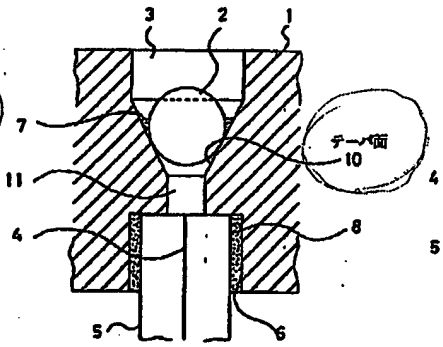
【符号の説明】

1　レンズホルダ
2　ボールレンズ
3　凹部
4　ファイバ心線
5　フェルール
6　挿入穴
9　連通孔
10　テーパ面

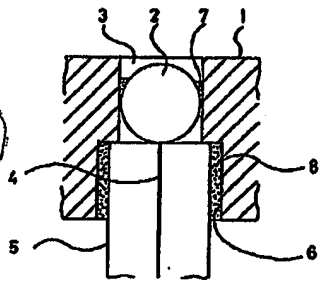
【図1】



【図2】



【図3】



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【考案の詳細な説明】

【0001】

【産業上の利用分野】

本考案は、球状のボールレンズを使用したボールレンズコリメータに関し、詳しくはボールレンズの心出し構造の改良に係わるものである。

【0002】

【従来の技術】

従来、各種光学機器に組み込まれているコリメータにおいては、ボールレンズを使用したものがあり、例えば図3に示すような構造になっている。

すなわち、レンズホルダ1の上部に球状のボールレンズ2を収納する円形凹部3を上面に開口して形成すると共に、レンズホルダ1の下部に軸心上にファイバ心線4を備えたフェルール5の挿入穴6を下面に開口しかつ凹部3に連通して形成し、挿入穴6に挿入したフェルール5の上端面と凹部3に収納したボールレンズ2とを近接対向させることにより、ファイバ心線4からの光をボールレンズ2で平行光にし、あるいは平行光をボールレンズ2で収束してファイバ心線4に入射するようになっている。

【0003】

前述したボールレンズコリメータの組み立てに際しては、まずレンズホルダ1の挿入穴6にフェルール5を差し込んでこれを仮止めし、つぎに凹部3にボールレンズ2を挿入してこれを接着剤7にて固定し、その後フェルール5を接着剤8により固定するようにしている。

【0004】

この場合、ボールレンズ2とフェルール5との心出しに対しては、凹部3と挿入穴6とを同心に形成した上で、凹部3の内径をボールレンズ2と同一径に加工することにより得られており、ボールレンズ2を接着剤7で固定する際にこの接着剤7をボールレンズ2の下半部に流下させないためにも、凹部3の内径をボールレンズ2と同一径にする必要がある。

【0005】

【考案が解決しようとする課題】

従来のボールレンズコリメータにあっては、ボールレンズ２をこれと同一径の凹部３へ挿入することにより、この凹部３と同心の挿入穴６に挿入されたフェルール５との心出しを行う構成であるが、ボールレンズ２が数ミクロンオーダの精度で加工されることから、このボールレンズ２を挿入する凹部３の内径の寸法公差もミクロンオーダが必要となり、レンズホルダ１に高精度の加工を必要とする問題を生じ、しかも、このような高精度の加工を行うためには、レンズホルダ１がセラミック等の特殊な材質に限定され、高価になるといった難点がある。

【０００６】

本考案は、従来の技術の有するこのような問題点に留意してなされたものであり、その目的とするところは、レンズホルダに高精度の加工を要さずして容易に心出しが行えるボールレンズコリメータを提供することにある。

【０００７】

【課題を解決するための手段】

前記目的を達成するために、本考案のボールレンズコリメータにおいては、レンズホルダに上面に開口して形成された円形凹部の底面に、球状のボールレンズより小径でレンズホルダに下面に開口して形成されたフェルールの挿入穴と同心の円形の連通孔を形成し、ボールレンズをこの連通孔に落し込むようにして凹部に収納したものである。

【０００８】

また、本考案のボールレンズコリメータにおいては、レンズホルダに上面に開口して形成された円形凹部の内周面に、下端が球状のボールレンズより小径で上端がこのボールレンズより大径のすり鉢状テーパ面を、レンズホルダに下面に開口して形成されたフェルールの挿入穴と同心に形成したものである。

【０００９】

【作用】

前述した構成のボールレンズコリメータにあっては、前者の場合、ボールレンズがレンズホルダの凹部底面に形成した円形の連通孔に落し込むようにして収納されるため、ボールレンズの中心が連通孔の軸心上に位置することになり、この連通孔がフェルールの挿入穴と同心であるため、ボールレンズと挿入穴に挿入さ

れたフェルールとの心出しが容易に実現する。

【0010】

また、後者の場合、レンズホルダの凹部に挿入されたボールレンズが凹部内周のテーパ面に接するため、ボールレンズの中心がテーパ面の軸心上に位置し、このテーパ面がフェルールの挿入穴と同心に形成されているため、ボールレンズと挿入穴に挿入されたフェルールとの心出しが容易に実現する。

【0011】

【実施例】

実施例につき、図1及び図2を用いて説明する。なお、前記と同一符号は同一もしくは相当するものを示すものとする。

（実施例1）

まず、請求項1に対応した実施例1を図1を用いて説明する。

レンズホルダ1の上部に上面に開口して形成された円形凹部3は球状ボールレンズ2より大径に形成され、この凹部3の底面にボールレンズ2より小径で凹部3とフェルール5の挿入穴6とを連通する円形の連通孔9が挿入穴6と同心に形成されている。

【0012】

このような構成にあっては、ボールレンズ2を凹部3へ挿入して連通孔9にボールレンズ2を落し込むことにより、ボールレンズ2の中心を連通孔9の軸心上に合わせることができ、したがって、連通孔9と同心の挿入穴6に挿入したフェルール5とボールレンズ2との心出しが実現する。

また、組み立てに際しては、ボールレンズ2とフェルール5とのどちらから挿入してもよく、連通孔9に落し込んで凹部3に収納したボールレンズ2を凹部3の底面に流し込んだ接着剤7により固定した後、フェルール5を接着剤8により固定する。

【0013】

（実施例2）

つぎに、請求項2に対応する実施例2を図2を用いて説明する。

レンズホルダ1の上部に上面に開口して形成された円形凹部3は、その上部内

周が球状ボールレンズ２より大径に形成され、凹部３の下部内周に上端がボールレンズ２より大径すなわち凹部３の上部内周と同一径で下端がボールレンズ２より小径のすり鉢状テーパ面１０が形成されている。

【００１４】

この凹部３はフェルール５の挿入穴６と同心に形成され、凹部３の底面が連通孔１１を通して挿入穴６に連通している。なお、この連通孔１１はボールレンズ２の焦点距離との関係で必要に応じて形成されるものであり、不要な場合はテーパ面１０の下端が直接挿入孔６に開口される。

【００１５】

このような構成にあっては、ボールレンズ２を凹部３に挿入することにより、テーパ面１０に接したボールレンズ２の中心がテーパ面１０の軸心上に位置し、したがって、テーパ面１０と同心の挿入穴６に挿入したフェルール５とボールレンズ２との心出しが実現する。

なお、凹部３に収納されたボールレンズ２はテーパ面１０との間の接着剤７により固定される。

【００１６】

【考案の効果】

本考案は、以上説明したように構成されているため、つぎに記載する効果を奏する。

請求項１に記載のボールレンズコリメータにあっては、レンズホルダ１の凹部底面にフェルール用挿入穴と同心に連通孔を形成することにより、ボールレンズをこの連通孔に落し込むだけで心出しが行え、レンズホルダの寸法公差が従来の数ミクロンオーダから数十ミクロンオーダでよくなり、高精度の加工を必要としなく、容易に心出しが実現するものである。

【００１７】

また、請求項２に記載のボールレンズコリメータにあっては、レンズホルダ１の凹部内周面にすり鉢状テーパ面をフェルール用挿入穴と同心に形成することにより、ボールレンズを凹部に挿入するだけで心出しが行え、前述と同様に高精度の加工を必要としなく、容易に心出しが実現するものである。